

# MULTI-PURPOSE TABLE WITH EMBEDDED METAL NUTS FOR ASSEMBLY

## BACKGROUND OF THE INVENTION

### Field of the Invention

5 The invention relates to an integrated multi-purpose table, and more particularly to a multi-purpose table with embedded metal nuts for assembly.

### Description of the Related Art

At present, most of the assembled computer tables are formed by combining several wood plates and screwing one of the wood plates to another. In another 10 kind of assembled computer table, one piece of wood plate or multiple pieces of wood plates are combined with one piece of metal member or multiple pieces of metal members using screws to fasten the wood plate(s) to the metal member(s). Screw holes are typically formed on the wood plate by the self-drilling screws when the screws are directly screwed into the wood plate. Although the assembled 15 computer table may be disassembled by loosening the screws, the re-assembled computer table tends to wobble and affect the user's operation because the structure intensity of each screw hole on the wood plate is not high enough or even may be damaged during the disassembling process.

Since there is a great need for the computer tables, producing a lot of 20 computers using wood plates cannot meet the requirements for environmental protection. Usually, it is possible to form the wood plates by gluing wood chips. However, the wood plates of the used computer table cannot be recycled for

reproduction, and thus the requirements for environmental protection cannot be met either. In addition, the processes for manufacturing such wood plates are complicated and time-consuming and require subsequent surface processing to finish the surfaces of the wood plates. Moreover, because the wood plates are 5 heavy, the overall weight of the computer table is too large to be moved or be transported easily.

Therefore, the conventional computer tables are too heavy and cannot be manufactured easily, and they are not suitable for mass production.

On the other hand, the electronic apparatuses (e.g. computers, printers, 10 speakers, and the like) placed on the conventional computer table usually have to be connected to an external power. Thus, the user has to connect the plugs of the power lines of the computers, printers, speakers, and the like to the receptacles, which is quite inconvenient to the user. More particularly, it is more inconvenient to the user when the whole computer table has to be moved from one place to 15 another place.

### **SUMMARY OF THE INVENTION**

It is therefore an object of the invention to provide a multi-purpose table with embedded metal nuts for assembly, wherein the multi-purpose table may be manufactured in mass-production and low-cost manners, and may be easily 20 disassembled and re-assembled by the user without losing its stability.

Another object of the invention is to provide a multi-purpose table with embedded metal nuts for assembly, wherein the multi-purpose table has a hub box

for integrating power lines and signal lines of the electronic apparatuses placed on the table.

To achieve the above-mentioned objects, the invention provides a multi-purpose table with embedded metal nuts for assembly. The multi-purpose table 5 includes two vertical support plates, a top plate and a horizontal plate assembly. The vertical support plates and the top plate are made hollow and formed of plastic material by way of blow molding. The vertical support plates are substantially parallel with and opposite to each other. The top plate, on which an electronic apparatus is to be placed, is connected to the vertical support plates. 10 The horizontal plate assembly is connected to the vertical support plates, wherein the top plate and the horizontal plate assembly are connected to the vertical support plates through a plurality of screws screwing into a plurality of metal nuts embedded in the vertical support plates.

The above-mentioned multi-purpose table may further include a hub box for 15 electrically connecting the electronic apparatus, which is placed on the multi-purpose table, to external sources. The hub box may include a power line port and a signal line port for integrating power lines and signal lines from the electronic apparatus and other electronic apparatuses.

#### **BRIEF DESCRIPTION OF THE DRAWINGS**

20 FIG. 1 is a back view showing a multi-purpose table that is actually used according to a first embodiment of the invention.

FIG. 2 is a partially pictorial view showing the multi-purpose table of the

first embodiment.

FIG. 3 is another partially pictorial view showing the multi-purpose table of the first embodiment.

FIG. 4 is a back view showing a multi-purpose table that is actually used  
5 according to a second embodiment of the invention.

#### **DETAILED DESCRIPTION OF THE INVENTION**

FIG. 1 is a back view showing a multi-purpose table that is actually used according to a first embodiment of the invention. As shown in FIG. 1, a scanner 2 and a printer 3 are placed on a multi-purpose table 1 of the invention. The multi-purpose table 1 includes two vertical support plates 11 and 12, a top plate 13, and a horizontal plate assembly 14. In this embodiment, the horizontal plate assembly 14 is composed of a first horizontal plate 15 and a second horizontal plate 16, both of which may intensify the intensity of the multi-purpose table. However, the horizontal plate assembly 14 also may be composed of only one of the horizontal plates 15 and 16, or only one plate larger than the horizontal plates 15 and 16. The horizontal plates 15 and 16 of the horizontal plate assembly 14 are connected to the vertical support plates 11 and 12.

Both of the two vertical support plates 11 and 12 are made hollow and formed of plastic material by way of blow molding, and the vertical support plates  
20 11 and 12 are parallel with and opposite to each other. The top plate 13 is also made hollow and formed of plastic material by way of blow molding, and the top plate 13, on which the scanner 2 is placed, is connected to the vertical support

plates 11 and 12.

In the processes for manufacturing the vertical support plates 11 and 12, several nuts 22 have been arranged in several predetermined positions such that the formed vertical support plates 11 and 12 are embedded with the nuts 22. That 5 is, the nuts 22 are encapsulated and fixed by the plastic material when the blow molding process is performed. The material of the nut 22 includes, without limitation to, the copper, and the metal is always the preferred material. Each of the nuts 22 is formed with a screw hole 23, into which a screw 21 may be screwed, in advance.

10 The screws 21 may fasten the top plate 13 to the vertical support plates 11 and 12, and the first and second horizontal plates 15 and 16 of the horizontal plate assembly 14 to the vertical support plates 11 and 12 so as to form a stable and firm multi-purpose table 1. In order to facilitate the movement of the multi-purpose table 1, two first rollers 24 are mounted to the bottom of each of the 15 vertical support plates 11 and 12. The first rollers 24 may be firmly attached to the plates 11 and 12 by the screws 21 screwed into the screw holes of the nuts.

The multi-purpose table 1 may further include a keyboard support 17 for supporting a keyboard 18. The keyboard support 17 is also connected to the vertical support plates 11 and 12. The keyboard 18 is electrically connected to the 20 scanner 2 to control the operations of the scanner 2. Herein, the scanner 2 may perform the scan-to-print operation in conjunction with the printer 3, the file transferring or e-mail sending operation in conjunction with the network, and the scan-to-fax operation in conjunction with a modem.

In addition, the multi-purpose table of the embodiment may further include a drawer cabinet 41 and a drawer 42. The drawer cabinet 41 is disposed between the vertical support plates 11 and 12, and also may be fixed to the vertical support plates 11 and 12. The drawer 42, in which blank sheets, documents or other 5 articles may be placed, is installed inside the drawer cabinet 41. In order to facilitate the user to move the drawer cabinet 41, several second rollers 25 may be mounted to the bottom of the drawer cabinet 41. In addition, two support feet 26 may be attached to the bottom of the drawer cabinet 41 to assist the second rollers 25 in supporting the drawer cabinet 41.

10        In order to centralize the cables of the scanner 2 and the printer 3, the multi-purpose table of the embodiment further includes a hub box 50 for electrically connecting the scanner 2 and the printer 3, which are placed on the multi-purpose table 1, to external sources. In this embodiment, the hub box 50 includes a power switch 51 and several power line ports 52 to 54. The power line port 54 is for 15 connecting a power line to an alternate current power source. The power line port 52 is connected to the scanner 2 and supplies the power to the scanner 2. The power line port 53 is connected to the printer 3 and supplies the power to the printer 3. The power switch 51 controls whether or not the power supplied from the power line port 54 is to be supplied to the scanner 2 and the printer 3.

20        Usually, the scanner 2 has an adapter 55 for converting the alternate current to the direct current. The adapter 55 may be housed in the first horizontal plate 15.

It is to be noted that the hub box 50 may be mounted to the first horizontal plate 15, the second horizontal plate 16, the top plate 13, the vertical support plate

11, or the vertical support plate 12.

FIG. 2 is a partially pictorial view showing the multi-purpose table of the first embodiment with the top plate 13, the drawer cabinet 41, and the drawer 42 being removed. It is to be noted that the multi-purpose table without the drawer 5 cabinet 41 and the drawer 42 has constructed a firm structure as well. The vertical support plates 11 and 12 are also integrally formed with a plurality of cavities 19 for intensifying the structure intensity of each of the vertical support plates 11 and 12 during the formation of the plates 11 and 12. All the members of the hub box 50 may be accommodated in one of the cavities 19, or in several cavities 19, 10 respectively. Consequently, the spaces occupied by the cavities 19, which are formed in order to intensify the structure intensity of the vertical support plates, may be sufficiently utilized.

FIG. 3 is another partially pictorial view showing the multi-purpose table of the first embodiment with the top plate 13 being removed. It is to be noted that the 15 multi-purpose table without the drawer cabinet 41 and the drawer 42 also constructs a firm structure. Thus, the drawer cabinet 41 and the drawer 42 may be directly moved to the position between the vertical support plates 11 and 12, and then they can be mounted to the plates 11 and 12 or just temporarily placed between the plates 11 and 12. The adapter 55 is accommodated in the first 20 horizontal plate 15. The first horizontal plate 15 and the second horizontal plate 16 may be formed of plastic material or metal material.

FIG. 4 is a back view showing a multi-purpose table that is actually used according to a second embodiment of the invention. Referring to FIG. 4, the

multi-purpose table 1 of this embodiment also includes two vertical support plates 11 and 12, a top plate 13, a first horizontal plate 15, a second horizontal plate 16, a keyboard support 17, a drawer cabinet 41, and a drawer 42. A scanner 2 is placed on the top plate 13, and a printer 3 is placed on the drawer cabinet 41. Except for 5 that a hub box 60 mounted to the first horizontal plate 15, which is different from the location of the hub box 50 in the first embodiment, the arrangement and fixing manner of other members are the same as those of the first embodiment, and detailed descriptions thereof will be omitted.

In order to centralize the cables of the scanner 2 and the printer 3, the multi-  
10 purpose table 1 of this embodiment further includes the hub box 60 for electrically connecting the scanner 2 and the printer 3, both of which are placed on the multi-purpose table 1, to external sources. Because there are many kinds of connection interfaces for the scanner 2 and the printer 3, some interfaces that are often used are incorporated in the hub box 60 of this embodiment.

15 In this embodiment, the hub box 60 includes a power switch 61, a plurality of power line ports 62 to 64, two telephone line ports 65, a USB hub 66, a network hub 68, and two RS232 ports 70 and 71. The power line port 64 connects a power line to an alternate current power source. The power line port 62 is connected to the scanner 2 to supply the power to the scanner 2. The power line port 63 is connected to the printer 3 to supply the power to the printer 3. The power switch 61 controls whether or not the power supplied from the power line port 64 is to be supplied to the scanner 2 or printer 3.

The two telephone line ports 65 may be connected to a modem of the

scanner 2 and the telecommunication network such that the scanned image obtained by the scanner 2 may be faxed through the modem, and the facsimile may be received by the scanner through the modem and converted into the printing data to be printed by the printer 3. The USB hub 66 includes several USB 5 ports 67 to be connected to the USB interfaces of the scanner 2 and the printer 3. Similarly, the network hub 68 includes several network cable ports 69 to be connected to the network interfaces of the scanner 2 and the printer 3. Similarly, the two RS232 ports 70 and 71 may be connected to the RS232 interfaces of the scanner 2 and the printer 3 so that the scanner 2 and the printer 3 may function 10 normally.

In addition, the connection ports with other interfaces, such as SCSI, IEEE 1394, and the like, also may be incorporated in the hub box 60. Furthermore, all the members of the hub box 60 also may be accommodated in the cavities or a cavity of the first horizontal plate 15, the second horizontal plate 16, the vertical 15 support plate 11 or 12, as mentioned above.

The invention having the above-mentioned structure has the following advantages:

1. Because the vertical support plates and the top plate are formed of plastic material by way of blow molding, the plates may be manufactured quickly and at 20 a low cost in a mass-production manner.

2. Because the surface smoothness of the plates formed by way of blow molding may be well controlled, the manufacturer does not have to perform

additional surface treatments with respect to the plates.

3. Because the plates are made of plastic material, they have lighter weights than the wood plates, and it is quite laborsaving in the transportation processes.

4. Because the plastic plates may be recycled, the requirements for 5 environmental protection may be met.

5. Because the plastic plates are embedded with the metal nuts, the plates may be assembled more firmly.

6. Because the power lines and signal lines, which are connected to the scanner and the printer, have been integrated into the hub box, the scanner and 10 printer does not have to be individually connected to external power lines or signal lines. Hence, instead of multiple sets of cables or lines, only one set of cables or lines is need for the electronic apparatuses placed on the multi-purpose table to be connected to external sources. It is quite advantageous to a user because he or she only has to integrally connect the cables of these electronic 15 apparatuses to the hub box at the first time when the electronic apparatuses are placed on the multi-purpose table. When the multi-purpose table and the electronic apparatuses have been moved to another place, the user may easily make the electrical connection to the external sources.

While the invention has been described by way of examples and in terms of 20 preferred embodiments, it is to be understood that the invention is not limited to the disclosed embodiments. To the contrary, it is intended to cover various modifications. Therefore, the scope of the appended claims should be accorded

the broadest interpretation so as to encompass all such modifications.